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| **Velagapudi Ramakrishna Siddhartha Engineering College::Vijayawada**  **(Autonomous)**  IV /IV B Tech Degree Examinations(November/2023)  Seventh Semester  **Department of Information Technology**  **20IT7404A – NATURAL LANGUAGE PROCESSING** | | | | | | | | | |
| Time: 3Hrs | | | **MODEL QUESTION PAPER** | | | | Max Marks:70 | | |
| Part – A is Compulsory  Answer one (01) question from each unit of Part – B  Answers to any single question or its part shall be written at one place only | | | | | | | | | |
| ***Cognitive Levels(K): K1-Remember;K2-Understand; K3-Apply; K4-Analyze; K5-Evaluate; K6-Create*** | | | | | | | | | |
| **Q. No** | | **Question** | | **Marks** | | **Course Outcome** | | **Cog. Level** | |
| **Part - A** | | | | **10X1=10M** | | | | | |
| 1 | a | Write a RE to find the English article “the”. | | 1 | | | CO1 | | K2 |
|  | b | What is meant by Word Normalization? | | 1 | | | CO1 | | K1 |
|  | c | Write a formula to calculate Perplexity? | | 1 | | | CO2 | | K1 |
|  | d | Define Naive Bayes model? | | 1 | | | CO2 | | K1 |
|  | e | Draw the parse tree for ‘a flight’ | | 1 | | | CO3 | | K2 |
|  | f | Define Treebank? | | 1 | | | CO3 | | K1 |
|  | g | What is the task of Named Entity Recognition? | | 1 | | | CO3 | | K1 |
|  | h | Define λ-reduction? | | 1 | | | CO4 | | K1 |
|  | I | List the pairs of words for hyponym. | | 1 | | | CO4 | | K1 |
|  | j | How to represent the subsumption relation between C and D. | | 1 | | | CO4 | | K2 |
| **Part - B** | | | | **4X15 =60M** | | | | | |
| **UNIT - I** | | | | | | | | | |
| 2 | a | Compute the minimum edit distance between intention and execution using the minimum edit distance algorithm. | | | 8 | | CO1 | | K4 |
|  | b | How Text wrangling and Cleansing are performed by using NLTK. | | | 7 | | CO1 | | K3 |
| **(OR)** | | | | | | | | | |
| 3 | a | Explain how the Stop word removal and Rare word removal are performed using NLTK with examples. | | | 7 | | CO1 | | K3 |
|  | b | Construct a regular expression for the following languages  i) The set of all alphabetic strings.  ii) The set of all lowercase alphabetic strings ending in a ‘b’.  iii) The set of all strings with two consecutive repeated words.  iv) The set of all strings from the alphabet a,b such that each a is immediately preceded and immediately followed by a ‘b’. | | | 8 | | CO1 | | K4 |
| **UNIT - II** | | | | | | | | | |
| 4 | a | Write a short notes on how to evaluate language models | | | 8 | | CO2 | | K3 |
|  | b | Explain with an example on training and testing the naive Bayes with add-one smoothing | | | 7 | | CO2 | | K2 |
| **(OR)** | | | | | | | | | |
| 5 | a | Illustrate Laplace smoothing with an example | | | 8 | | CO2 | | K3 |
|  | b | Discuss Naive Bayes Classifiers? | | | 7 | | CO2 | | K2 |
| **UNIT - III** | | | | | | | | | |
| 6 | a | Identify the categories of English word classes and explain in detail. | | | 8 | | CO3 | | K2 |
|  | b | Parse the sentence “Book the flight through Houston” using CKY algorithm | | | 7 | | CO3 | | K4 |
| **(OR)** | | | | | | | | | |
| 7 | a | Describe Hidden markov model with suitable example | | | 7 | | CO3 | | K2 |
|  | b | Construct suitable example for grammar equivalence and normal form. | | | 8 | | CO3 | | K3 |
| **UNIT – IV** | | | | | | | | | |
| 8 | a | Discuss about modus ponens and explain how it is used in forward chaining? | | | 7 | | CO4 | | K2 |
|  | b | Discuss about word senses and relations between word Senses. | | | 8 | | CO4 | | K2 |
| **(OR)** | | | | | | | | | |
| 9 | a | Write a short notes on the semantics of First-Order Logic | | | 8 | | CO4 | | K2 |
|  | b | Illustrate Description Logics with suitable examples | | | 7 | | CO4 | | K4 |